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Olinda Santin, Moyra Mills, Charlene Treanor and Michael Donnelly

Corresponding author: Olinda Santin, School of Nursing and Midwifery, Queen's University Belfast, Medical Biology Centre, Block 97, Health Sciences, Belfast
Telephone: 028 9063 33078 email: o.santin@qub.ac.uk

Moyra Mills: School of Nursing and Midwifery, Queen's University Belfast, Medical Biology Centre, Block 97, Health Sciences, Belfast

Charlene Treanor: School of Medicine and Dentistry and Biomedical Science. Institute of Clinical Sciences B, Royal Victoria Hospital, Grosvenor Road, Belfast. BT126BJ

Michael Donnelly: School of Medicine and Dentistry and Biomedical Science. Institute of Clinical Sciences B, Royal Victoria Hospital, Grosvenor Road, Belfast. BT126BJ

Abstract

The population of people surviving cancer is continually increasing and currently cancer survivors represent approximately 3.7% of the American population and 3% of the UK population. There is limited and inconclusive empirical evidence regarding the long-term health and wellbeing of cancer survivors.

Methods: 289 cancer survivors and 262 matched-age and sex patients from the same group of General (primary care) Practices completed postal questionnaires measuring health and wellbeing, health service utilisation and satisfaction and health care needs.

Main results: Cancer survivors reported poorer health and wellbeing and health service utilisation than the general population. Despite this poorer health the majority of cancer survivors reported satisfaction with services and almost two-thirds of survivors did not report any needs.

Conclusions: The majority of cancer survivors do not appear to require additional support services. There is, however, a subgroup of survivors who warrant specialist support, particularly survivors who are older, experience late effects and have had adjuvant treatments. Future research should focus on developing methods that could be used in routine clinical practice to identify' at risk' or vulnerable patients and to provide appropriate and timely support.

Introduction

The population of people surviving cancer is continually increasing and currently cancer survivors represent approximately 3.7% of the American Population and 3% of the UK population [1-2]. Prevalence figures in the UK are expected to reach 4 million by 2020 [2]. There is limited empirical evidence regarding the long term health and wellbeing of cancer survivors, and even less information regarding health care needs and health service utilisation. The few international studies available [3-10] suggest that cancer survivors experience poorer health and wellbeing and have a higher level of health service utilization compared to the general population. These studies however are limited methodologically and there are no studies that have been undertaken in Northern Ireland or in the Republic of Ireland. Furthermore, there is inconsistent evidence available regarding the prevalence of unmet need [11-18].

Data is also lacking regarding late effects of cancer treatment. It is well recognized that cancer and its treatment is associated with the development of physical and psychological problems that may not dissipate over time [19]. These problems may emerge at various time points along the illness trajectory. Whilst some of these problems are related to cancer treatment and appear during or immediately after treatment others do not manifest until months or even years later. The combined effect of the lack of research in this area including a paucity of studies about illness trajectories makes it difficult to differentiate between problems that are long-term or late effects of varying duration. The development of specialist services for cancer survivors is receiving specific attention within UK health policy [20]. It is important that the match between health and wellbeing, need for services and patterns of health service use are understood to ensure that resources are targeted appropriately.

Empirical data regarding the health and wellbeing of cancer survivors is sparse and the few studies available are inconclusive. This study was undertaken in order to map patterns of health status and wellbeing, health service utilization and health care needs of cancer survivors in order to inform service development and improvement.

Methods

The Northern Ireland Primary Care Research Network (NI PCRN) comprises research-minded General Practices and each Practice was paid an honorarium for .the time that they spent facilitating the conduct of the survey. Practices or surgeries spanned the five Health and Social Care Trusts (or care provider agencies) in Northern Ireland including urban and rural areas.

Cancer survivors (2-15 years post diagnosis) in each participating GP practice were identified via the Northern Ireland Cancer Registry (NICR). The NICR registers all cancers diagnosed in Northern Ireland, including non-melanoma skin cancer. A study number was assigned to every live registered cancer patient in the participating GP practices. A random number generation package (www.random.org) was used to generate a random sample of 865 cancer survivors.

GPs screened their list of randomly selected patients and were asked to confirm whether or not a patient:

- had a cancer diagnosis during adulthood
- was not over 80 years old
- was alive
- was not receiving palliative or end of life care
- was not currently receiving active treatment for cancer i.e. chemotherapy, radiotherapy or surgery (this did not include medications for prophylactic purposes or hormone treatment)
- had no cognitive impairment that would limit their ability to self-complete the questionnaires
- GPs were not aware of any other reason why a patient should not be asked to participate in the study

Participants eligible for inclusion were forwarded a pre-prepared addressed questionnaire pack.

A sample of control patients who did not have a diagnosis of cancer (but who may have had other illnesses) was obtained by searching each GP's database for age and gender-matched patients (approximating 1 per eligible survivor, calculated on the basis of an attrition rate of 40-

50%)**.** Surgeries were requested to note the age of the youngest and oldest male/female on the list of eligible patients. Every 20th person on the list was selected.

GPs were asked to confirm whether or not each control patient:

- had never had a diagnosis of cancer
- was alive
- was not receiving end of life care
- had no cognitive impairment that would limit their ability to self-complete the questionnaires
- there was no reason why a patient should not be asked to participate in the study

Potential participants who had not replied within 2 weeks of receiving a questionnaire pack received a reminder pack. Reminder calls to non-respondents were conducted 6 weeks following the first mail out.

Measures

The survey questionnaire for survivors comprised questions on the following topic areas:

- **Socio-demographic questions**: e.g. age, sex, employment
- **Health and wellbeing:** health status was assessed using the (SF-36) [21]. The SF-36 is the most common health status measure [21] and it has been used extensively in both cancer and non-cancer populations. While a cancer specific measure could have provided more detailed information on cancer related symptoms it would not have been appropriate for use in the general population. The results or scores on a completed SF-36 may be calculated to form a mental health summary component score and a physical health summary component score.
- **Health service utilisation:** Health service use based on two questions from the English Macmillan Health and Well-being Survey [22] and one question assessing satisfaction with services.
- **Health and social care needs:** Need for care was assessed using an abbreviated and adapted version of Cancer Survivor Unmet Need (CaSUN) questionnaire [11]. A scoping review of studies that used the CaSUN showed that cancer survivors regardless of cancer

site had 7 common needs. Survivors indicated on the short version of the CaSUN if they experienced each need, whether the need was met or unmet and the severity of each need.

- **Late effects:** The severity of any late effects related to cancer and/or treatment was recorded on an established self-reported late effect scale [23].

The questionnaire pack for control patients was equivalent to the pack that survivors received except for the omission of questions on need for care and late effects.

In keeping with practice reported in previous studies that used the SF-36 to assess health status, data was imputed into an unanswered question when at least 50% of the questions in a given domain were answered [24]. A mean score for each domain was calculated based on the total number of responses provided by participants. Each mean score was multiplied by the total number of items within the relevant domain to impute scores of how survivors may have responded had the questionnaire been fully completed. Individuals that did not answer 50% or more items in any given domain were not included in analysis. Regarding all other questions (health service utilisation, needs and illnesses) a missing response was considered to be a 'no' response.

Two multiple linear regression models were generated using the physical component summary scores (PCS) and the mental summary component scores (MCS) as dependent variables. The following independent variables were entered into each model: age in years as a continuous variable; sex with males used as the reference category; cancer site with melanoma entered as the reference category; years since diagnosis with 20+ year entered as the reference category; reported unmet needs included no reported unmet needs as the reference category and at least one reported unmet need; health service utilisation frequency was entered as a continuous variable; treatment type received was categorised as radiotherapy only, chemotherapy only, surgery only as the reference category and combined therapies; number of co-morbidities was entered as a continuous variable and late effects was categorised into mild, moderate and severe with no late effects as the reference category.

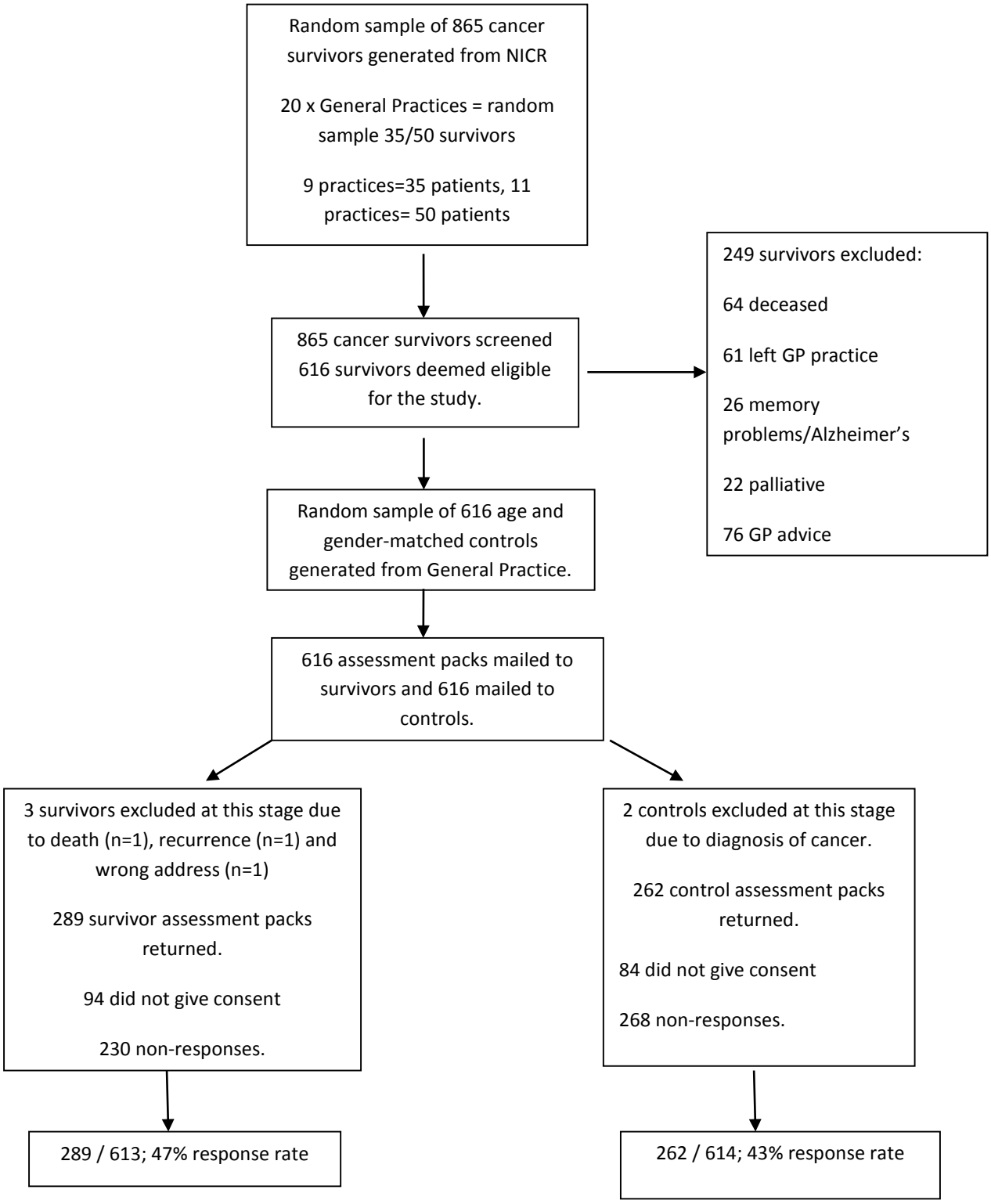
Results

Two hundred and eighty-nine survivor questionnaires were completed and returned; the response rate for survivors was 47% (289/613). A total of 262 control questionnaires were completed and returned; the response rate was 43% (262/614). The average age of cancer survivors who responded was 63 years old and 59% (171) were female. Approximately 34% had been diagnosed with breast cancer, 18% with prostate cancer and 14% with colorectal cancer. Time since diagnosis ranged from one to twenty or more years. Over half of respondents had been diagnosed within the past six years. There were no statistically significant differences between survivors that responded and those that did not in terms of age, sex, and time since diagnosis (Table 1). Furthermore, there were no significant differences between cancer survivors and controls in terms of age or sex.

Table 1: Chi-squared tests comparing respondents and non-respondents in terms of sex, cancer site and time since diagnosis

	Respondents n (%)	Non-respondents n (%)	X^2	df	p value
Sex					
Male	118 (41)	135(41)	.01	1	.91
Female	171 (59)	192 (59)			
Cancer Site					
Breast	99 (34)	86 (26)	21.68	9	.01
Prostate	51 (18)	35 (11)			
Colorectal	40 (14)	47 (14)			
Gynecological	26 (9)	42 (13)			
Melanoma	21 (7)	25 (8)			
Hematological	19 (6)	31 (9)			
Urinary	18 (6)	29 (9)			
Head and neck	8 (3)	16 (5)			
Upper gastro-intestinal	5 (2)	4 (1)			
Other	2 (1)	12 (4)			
Years since diagnosis					
1-3 years	90 (31)	84 (26)	10.12	6	.12
4-6 years	63 (23)	72 (22)			
7-9 years	48 (17)	53 (16)			
9-11 years	34 (12)	32 (10)			
12-15 years	27 (9)	39 (12)			
16-20 years	21 (7)	41 (12)			
20+ years	6 (1)	8 (2)			

Figure 1: Flowchart showing sampling and recruitment process



Independent samples t-tests were conducted to examine whether or not there were statistically significant differences between survivors versus controls. Survivors reported significantly poorer health than the General Practice population in terms of physical functioning, physical role limitations, emotional role limitations, mental health, vitality, general health perception and social functioning. There was no statistically significant difference in scores for survivors and controls in terms of change in health in the past year or pain scores (See Table 1). Cancer survivors reported a significantly lower PCS and a lower MCS and a significantly greater number of co-morbidities compared to controls (see Table 2).

Table 2: Independent t-test comparisons between survivors and controls on the SF-36 domains, SF-36 component scores and number of co-morbidities.

Domain	Group	n	Mean	SD	T	Df	p value*	Mean Difference	CI lower	CI upper
Physical Function	survivor control	286 262	62.83 74.60	33.51 29.05	-4.40	544	0.012	-11.77	-17.02	-6.52
Role Limitations: Physical	survivor control	276 256	57.76 72.95	44.95 40.80	-4.09	530	0.012	-15.19	-22.49	-7.89
Role Limitations: Emotional	survivor control	280 252	66.61 81.22	43.73 35.70	-4.24	525	0.012	-14.61	-21.38	-7.84
Mental Health	survivor control	284 261	73.18 78.23	19.52 18.04	-3.13	543	0.024	-5.05	-8.22	-1.88
Vitality	survivor control	284 261	54.83 62.03	24.75 22.35	-3.57	543	0.012	-7.20	-11.16	-3.24
General Health Perception	survivor control	284 260	59.32 68.31	24.75 22.35	-4.45	542	0.012	-8.98	-12.95	-5.02
Change in Health	survivor control	287 261	53.14 49.43	22.39 16.54	2.22	524	0.324	3.71	-0.43	6.70
Pain	survivor control	287 260	68.69 74.39	30.16 28.75	-2.27	544	0.288	-5.71	-10.66	-0.76
Social Functioning	survivor control	288 261	78.75 86.15	26.18 23.08	-3.52	547	0.012	-7.40	-11.53	-3.27
Physical Component Score	survivor control	272 251	42.74 49.94	18.86 16.89	-4.61	521	0.012	-7.20	-10.27	-4.13
Mental Component Score	survivor control	272 251	47.53 50.51	11.56 9.71	-3.18	516.56	0.012	-2.98	-4.81	-1.15
Number of Co-morbidities	survivor control	289 262	1.74 1.31	1.73 1.29	3.34	529	0.012	0.43	0.18	0.69

*Independent t-test, Bonferroni adjusted.

Over half of cancer survivors (55%) reported that they did not experience late effects. Less than one fifth (18%) experienced mild late effects and respondents indicated that these mild late effects were managed with medication or minor lifestyle changes. Approximately 12% experienced moderate effects that required providing treatment and some assistance. The remaining 8% of cancer survivors experienced severe late effects which extremely restricted their daily activities (7% did not answer question).

Health and social care needs and satisfaction with services

Approximately 60% of survivors reported 'no need'. The top unmet need was the need for better coordinated care (25%) though only 12% of survivors described this need as strong. Need for support with health insurance and travel insurance was identified by 23 % of cancer survivors, the majority of whom described this need as moderate. The third ranked unmet need was the need for help to manage anxiety and recurrence concerns related to cancer (21%), though a serious or severe degree of this need was experienced by only 1%. Hospital car parking was identified as a need by 15% of survivors. The fifth unmet need was the need for a key health worker (14%). Most survivors (94%) did not need additional information support for themselves or for their partners (see Tables 3 and 4)

Table 3: Proportion of survivors reporting severity of needs and unmet need

		Need Strength			
Need	No need	Weak	Moderate	Strong	Total unmet
Recurrence concerns	79% (194)	9% (22)	8.2% (20)	1.4% (9)	21% (51)
Co-ordinate care	74.5% (181)	4.5% (11)	8.6% (21)	12.3% (30)	25.4% (62)
Health and travel insurance	76.6% (200)	5.4% (14)	11.5% (30)	6.5% (17)	23.4% (61)
Hospital car-parking	85.1% (222)	4.6% (12)	5% (13)	5.4% (14)	15% (39)
Key health worker	85.7% (174)	5.9% (12)	6.9% (14)	1.5% (3)	14.3% (29)
Up to date information	94% (224)	2% (5)	4% (10)	4% (10)	10% (25)
Partner information	93.9% (247)	0.8% (2)	2.7% (7)	2.7% (7)	7.1% (16)

*Numbers do not always add up to 289 as some survivors did not answer questions

Table 4: Satisfaction with health services

Group	Very satisfied	Satisfied	Dissatisfied	Very dissatisfied
	n (%)	n (%)	n (%)	n (%)
Survivor	143(50)	112 (40)	3 (1)	3 (1)
Control	118 (45)	104 (40)	5 (2)	3 (1)

Health service use

Cancer survivors paid significantly more visits to a GP, primary care professionals other than their GP, outpatients and complementary therapists than the control group in the previous 12 months. There were no significant differences in the use of mental health services, allied health professionals, district nurses and hospital stay between cancer survivors and the General Practice population.

Predictors of health and wellbeing

Late effects and treatment type were significant predictors of survivors MCS. Cancer survivors who were older, more frequent users of health services and experienced more illnesses and severe late effects reported significantly poorer PCS.

Table 5: Multiple linear regression analysis of cancer survivor characteristics and physical and mental component summary scores

Explanatory variable	n	Mental Comp Mean score	** Fully adjusted mean (95% CI) p value	Physical Comp Mean score	** Fully adjusted mean (95% CI) p value
Age	272	42.7	-0.29 (-0.48, -0.09) p=0.004	47.53	p= 0.28, 0.08(-0.07,0.24)
Sex	Male (110) Female (162)	43.11 42.49	p=0.86 -0.64 (-7.83, 6.55)	47.59 47.49	p=0.68,-1.14(-6.80,4.42)
Cancer site	Melanoma (20) Urinary (18) Other (6) Breast (93) Colorectal (35) Gynae (25) Head and Neck (8) Hematological (18) Prostate (49)	47.64 42.16 27.13 44.21 36.39 45.22 39.81 38.60 45.33	p=0.36 -0.12(-12.96,12.72) -5.46(-22.47,11.56) -5.36(-4.04,14.76) 2.86(-8.53,14.26) 5.84(-4.82,16.48) 13.35(-5.53,32.23) 5.74(-7.07,18.54) 8.42(-3.52,20.36)	49.24 46.78 42.94 48.34 44.73 48.68 42.56 47.26 48.48	p=0.79, -3.40 (-13.42, 6.62) -5.00 (-18.27, 8.28) 0.15 (-7.18, 7.48) -4.04 (-12.94, 4.85) -0.02 (-8.33, 8.30) 2.97 (-11.77, 17.70) 1.04 (8.95, 11.02) -0.08 (-9.40, 9.23)
Years since diagnosis	20+ (6) 1-3 (86) 4-6 (60) 7-9 (42) 9-11(34) 12-15 (25) 16-20 (19)	31.84 40.97 41.61 44.13 42.12 48.35 41.46	p=0.10. 3.32(-12.46,19.09) 2.31(-13.62,18.24) 1.99(-18.14,14.17) -0.99(-17.39,15.60) 10.55(-6.72,27.83) 6.50(-10.69,23.69)	44.29 45.24 47.07 48.15 48.98 52.92 49.36	p=0.25 -3.67 (-15.99, 8.64) -3.82 (-16.25, 8.62) -4.85 (-17.45, 7.76) -4.17 (17.04, 8.70) 4.34 (-9.14, 17.82) -1.14 (-14.55, 12.27)
Need met/unmet	No need (163) Need (109)	47.31 35.90	p=0.47 -1.60(-5.93, 2.72)	50.20 43.55	p=0.06 -3.21(-6.58, 0.17)
HSU	271	42.65	p=0.04 -0.14 (-0.27, -0.01)	47.50	P=0.44 -0.04 (-0.15, 0.06)
Treatment Type	Surgery (50) Radiotherapy (14) Chemotherapy (9) Hormone (9) Combination (121)	55.48 36.35 45.25 41.29 41.61	p=0.08 -10.75(-19.21, -2.29) -5.01 (-15.70,5.69) -7.78 (-16.75, 2.18) -5.73 (-10.77,-0.69)	51.75 47.01 44.79 50.62 45.49	 p=0.03 -5.55 (-12.16, 1.05) -7.25 (-15.59, 1.10) -2.89 (-10.66, 4.89) -6.24 (-10.17, -2.31)
Illnesses	272	42.74	p<0.001 -3.40 (-4.62, -2.18)	47.53	p=0.03 -1.07 (-2.02, -0.12)
Late effects	No late effects (155) Mild (47) Moderate (32) Severe (21)	49.62 45.74 24.00 17.17	p<0.001 -7.30 (-12.33, -2.28) -22.82 (-28.87, -16.77) -27.52 (-35.22, -19.81)	49.93 49.15 39.39 38.43	p<0.001 -1.10 (-5.02, 2.82) -8.49 (-13.21, -3.78) -10.52(-16.53,14.51)

Table 6: Multiple linear regression analysis of cancer caregiver characteristics and physical and mental component summary scores

Variable	n	Mean Mental comp score	** Fully adjusted mean (95% CI) p value	Mean physical comp score	** Fully adjusted mean (95% CI) p value
Age	80	44.1	-0.25 (-0.7, 0.2) p=0.25	45.8	0.3 (-0.1, 0.7) p=0.17
Sex	Male (32) Female (57)	47.2 42.9	p=0.90 0.62 (-9.8, 11.0)	49.0 44.0	p=0.91 -0.6 (-9.9, 11.1)
Cancer site	Melanoma(3) Breast (29) Colorectal (10) Gynecological (4) Head and Neck (6) Hematological (8) Prostate (21)	40.2 48.7 35.5 39.2 41.4 43.8 45.5	p=0.19 25.3 (-4.9, 55.4) 22.3 (-8.4, 53.0) 0.66 (-37.0, 38.3) 27.3 (-10.0, 64.6) 26.4 (-3.8, 56.7) 20.2 (-10.8, 15.3)	38.6 47.7 45.4 46.9 45.7 44.9 45.4	p=0.92 14.7 (-15.8, 45.1) 15.9 (-15.1, 47.0) 16.5 (-21.5, 54.5) 10.8 (-26.9, 48.5) 16.8 (-13.7, 47.3) 11.7 (-19.7, 43.0)
Years since diagnosis	20+ (3) 1-3(33) 4-6(22) 7-9(12) 9-11(14) 12-15 (4) 16-20 (1)	36.7 45.2 43.5 43.9 43.1 51.8 62.6	p=0.84 3.1 (-19.3, 25.5) -2.8 (-24.8, 19.2) -5.0 (-27.7, 17.8) -2.5 (-29.5, 24.6) -0.4 (-28.2, 27.4)	43.7 45.5 47.4 43.1 43.8 53.5 57.7	p=0.98 0.99 (-21.6, 23.6) 2.9 (-19.4, 25.1) -1.7 (-24.6, 21.3) 1.6 (-25.7, 28.9) 5.0 (-23.1, 33.1)
HSU	86	44.1	-0.23(-0.5,0.7) p=0.13	45.6	-0.3 (-0.60, -0.01) p=0.04
Illnesses	89	44.5	-5.3 (-8.9, -1.7) P=0.05	45.8	-0.3 (-3.9, 3.4) p=0.88
Hours per week spent caring	22+ (14) 1-7 (8) 8-14 (4) 15-21 (22)	53.2 40.6 43.1 33.7	p=0.09 -2.5 (-19.4, 14.5) -7.3 (-23.4, 8.9) -14.2 (-25.5, -2.9)	46.4 43.9 44.5 40.5	p=0.22 11.6 (0.2, 23.0) 9.7 (-7.1, 26.5) 7.1 (-9.0, 23.1)

Discussion

Compared to age- and gender- matched controls, cancer survivors reported significantly poorer scores in relation to physical and mental wellbeing. A comparison of the SF-36 UK population norms for people aged 60-64 [24] indicates that cancer survivors in NI have poorer health domain and component scores. These findings differ from recent UK studies that suggest that health status [18] and or psychological difficulties [25-26] of cancer survivors are consistent with or better than population norms. This difference may be due to the fact that previous UK studies focused on long-term survivorship (5+ years post-diagnosis) or did not include early-stage survivors. However, this study did not find any association between time since diagnosis and health and wellbeing. Overall, previous international studies demonstrate that cancer survivors fair worse than the general population in terms of health and wellbeing [3-10]. It is important to bear in mind the methodological difficulties of conducting like-with-like comparisons between the health and wellbeing estimates presented here and in earlier studies as the majority of studies did not use validated measures or did not exclude patients who remained in active treatment. In addition, it is difficult to discern the clinical meaning of SF-36 scores and of statistically significant differences between survivors and the General Practice control group due to a lack of studies in this area.

Approximately 40% of cancer survivors reported late effects; 18% reported mild late effects and 20% reported moderate or severe late effects. There is little epidemiological data regarding the prevalence of late effects in adult cancer survivors. The limited evidence suggests that late effects may occur in 11-30% of cases [12, 27]. The extent to which accurate comparisons can be made between prevalence estimates across studies is restricted due to conceptual and methodological differences. However, a higher proportion of cancer survivors in Northern Ireland appear to report late effects and to report more severe late effects. The prevalence of late effects is likely to rise given the growing population of survivors.

Alongside living with late effects, cancer survivors reported a significantly greater number of co-morbidities compared to the General Practice population. On average, cancer survivors reported experiencing 1.74 co-morbidities compared to 1.31. This result is consistent with other studies, which found that between 69-88% of cancer survivors reported one or more co-morbid conditions [28-29]. However, similar to earlier studies, it is difficult to be clear about the nature and direction of this relationship. For example, it is difficult to disentangle the extent to which co-morbidity may be due to poor lifestyle choices such as smoking and due to cancer and its treatment. Nonetheless, it is important to note particularly by health planners and providers that cancer survivors tend to live with a significantly higher number of co-morbidities and late effects; and to consider this patient profile during follow-up care and treatment.

Cancer survivors reported significantly higher health service utilization. The most frequently reported health services used by cancer survivors were visits to their General Practice and hospital-based outpatient appointments. There were no significant differences in use of specialist services such as mental health. Some studies have found that cancer survivors had greater use of GP services [30, 22] and medical specialists; other studies have presented mixed evidence [31]. Differences between health care systems and methods of recording utilization may explain between-study variation.

Despite the poor health outcomes, approximately 90% of cancer survivors reported that they were satisfied with the services that they received. Furthermore, the majority of cancer survivors did not report any needs for services and those that did, reported low level need for support with regards to co-ordinated care, health and travel insurance, recurrence concerns and hospital car parking. These findings, that the majority of survivors do not have unmet needs, are consistent with other UK studies [12, 17-18]. There is, however, variation between unmet need levels across countries [11, 13-16]. This may be due partly to different health systems and possibly to cultural factors. For example, UK and Irish cancer survivors may be less likely to vocalise a need for support compared to survivors elsewhere. The study has a number of limitations. A strength and weakness of the study is that it is based upon participants' views of their health and wellbeing, service use, satisfaction and health care needs. Self-report measures may be subject to recall bias and survivors may over- or under-estimate their health and health related behaviors. The inclusion of more objective measures to record for example physical functioning or the use

of secondary service data to collect information about health service use and drug use would be beneficial. The research team is exploring the possibility of using data-linkage across service data sets to investigate the health and health care of cancer survivors. The ethical requirements and postal nature of this survey did not allow the research team to make direct contact with participants. A further limitation is the inherent difficulties in defining and measuring late effects and the lack of reliable and valid measures. In light of these difficulties, we choose a measure that was low in participant burden and had been tested with this patient group.

Overall, the data collected from this large representative sample of cancer survivors contributes to the limited empirical data about cancer survivors, particularly in Ireland. Currently, health care providers and policy makers within the UK and Ireland are giving consideration to ways in which to provide care for cancer survivors. The results of this study indicate that whilst survivors may have poorer health than a General Practice population, they are generally satisfied with the services that they receive and they do not require additional support services. There is, however, a subgroup of survivors who may warrant specialist support, particularly survivors who experience late effects. Future research should focus on methods of identifying cancer survivors according to their risk status and vulnerability to suffer illness and to developing and delivering appropriate person-centered responses.

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